Palmetto AVIATION

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Flying Shriners

The Greenville Hejaz Flying Nobles will host the Southeastern Shrine Flying Fezzes during the Southeastern Shrine Convention of 1985 to be held in Greenville. Ralph Schmidt, right, founded the unit in 1968 to provide air transportation for burned and crippled children. Arnold Emery, left, is currently captain of the Unit. (Aeronautics Commission photo)

Flying Shriners to compete at meet

Shrine flying units from nine southern states will converge in Greenville Aug. 15-17 for the Southeastern Shrine Flying Fezzes Association annual convention and aerial competition.

The meeting is part of the Southeastern Shrine Convention of 1985, held for the first time ever in Greenville, the conclave is expected to attract 15,000 shriners, wives and friends. It is already being called the largest convention ever held in Greenville.

Arnold Emery, Captain of the Hejaz Flying Nobles, as the Greenville Unit is known, said 10 to 15 flying units and 30 to 40 aircraft will participate in the flying competition scheduled for Donaldson Center Aug. 16.

Events include a landing contest in which pilots try to land on a stripe 500 feet from the end of the runway; a message drop in which aviators will drop a one pound bag from 500 feet onto a target and a taxi contest in which the contestants see who can taxi the aircraft's front wheel closest to a horizontal and vertical marker.

Following the competition, the Nobles will dedicate a recently purchased hangar at Greenville Downtown Airport which will serve as the group's headquarters. Other activities include the unveiling and brick laying ceremonies of the new Shriners Hospital, the Southeastern Shrine Parade on Greenville's Main Street and a country and western hoedown and barbecue.

The Hejaz Flying Nobles and the Flying Fezzes of other southern states provide a crucial service to shriners nationwide by flying crippled and burned children to hospitals for treatment, sometimes on as little as 15 minutes notice.

The Hejaz Flying Nobles unit in Greenville was founded by Ralph Schmidt in 1968 and was one of the first flying units in the country. Schmidt, a Greenville businessman, is now Captain Emeritus of the unit.

The unit also provides routine transportation for children on followup treatment.

"Many of our flights are not strictly emergencies," Emery said. "A major part of our flying is transporting children back for clinic visits on an outpatient basis."

PALMETTO AVIATION is an official publication of the South Carolina Aeronautics Commission. It is designed to inform members of the aviation community, and others interested in aviation, of local developments in aviation and aviation facilities and to keep readers abreast of national and international trends in aviation.
The Aeronautics Commission is a state agency created in 1935 by the S.C. General Assembly to foster and promote air commerce within the state.

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Eighth Airports Conference Planned at Hilton Head

The Eighth Annual South Carolina Airports Conference, planned this November at Hilton Head, promises a varied agenda with a number of topics which should appeal to airport sponsors, FBOs, managers and others involved in the management and development of airports.

The general theme of the 1985 conference is "Airport Protection and Enhancement"; discussion items will cover legal protection as well as physical protection.

Proposed topics include:

--Airport security and aviation theft
--Obstructions and the airport environment
--Fueling: What the recent legislation means to airport owners and operators
--Airport leases: Some problems and solutions
--Land use controls: What they are and what they can and cannot do
--South Carolina's airport development program
--The FAA's Airport Improvement Program

In addition, manufacturers and vendors of airport equipment and services will have exhibits set up to demonstrate the latest in lighting, asphalt treatment and other items for airports. Time for perusing the exhibits as well as for golf and tennis will be available in the afternoon.

Make plans now to be on hand when it happens at the Marriott's Hilton Head Resort Nov. 13, 14 and 15. A block of rooms has been reserved at $45 per night, single; $55 per night, double occupancy. Reservation forms will be mailed to those who attended last year's conference. If you would like to attend this year, be sure to return your reservations as soon as possible. The conference registration fee will be $55 per person and will cover the Thursday luncheon, coffee and soda and two cocktail receptions.

The Aeronautics Commission looks forward to seeing you all again this year. If you do not receive a registration form by Aug. 15, please call 758-2766.

Owens Airport enhanced by ASR approach

Owens Airport, Columbia's in-town airport, now has an Airport Surveillance Radar (ASR) approach to runway 31 operated by Columbia approach control.

Before the approach was commissioned, aircraft on instrument flight plans with Owens as a destination, had to have VFR conditions to land at the airport, or divert to Columbia Metropolitan. Now, the ASR approach allows IFR aircraft to land at Owens with as little as one and one quarter miles visibility. The minimum descent altitude is 640 feet.

The approach is available from 7 am to 10 pm. Aircraft wishing to use the approach should refer to the Jeppesen approach plates. The approach is not published in the U.S. Government Instrument Approach Procedures book.

Columbia Airport Tower Chief Bob Patterson said many aircraft have taken advantage of the approach since it was commissioned late last year. Work is already underway to establish an RNAV approach to Owens from the Columbia VORTAC, he said.

Terminal building at Walterboro-Colleton County Airport

Skyway Aviation Inc. takes over Walterboro FBO

Skyway Aviation Inc., based in Asheville, NC, has recently taken over the lease of the FBO in Walterboro, SC.

Located in the southeastern tip of the state, on the Victor Airway, Skyway owners Carl McIntosh and Rosaly Sheppard hope to attract more traffic into that FBO by cutting jet and aviation fuel prices. They are charging a $1.78 for 100LL and $1.59 for jet fuel.

The local manager at Walterboro is Jean Spence. Skyway began their operation by opening two flight training schools in Asheville and Charlotte. They have expanded into leasing the Walterboro facility and will manage an FBO in Asheville soon to begin construction.

McIntosh has been a private pilot and commander of the Civil Air Patrol in Asheville, Sheppard has experience as a charter pilot, is an A & P mechanic and a flight instructor.

The newly built terminal in Walterboro contains showers, lockers, a pilot's briefing room and lounge, and a meeting room with a wet bar. There is vending machine food but a local restaurant will cater food for a small meeting.

The airport, with an elevation of 100′, has three well kept runways. The longest runway is 5,800′ and all three are equipped with VASI lighting systems. The airport is attended from 7 a.m. til 8 p.m. and runway lights can be activated on Unicom frequency 112.8 by five clicks. It also has an NDB approach.

The company plans to expand their current tie down area and rebuild the existing wooden hangers. While repairs are now on an appointment basis, Skyway wants to have a full time mechanic on duty in the near future to even include painting and upholstering.

The airport will also provide aircraft sales charter service and flight training.

Skyway owners feel that once pilots know the facility is there and what services they can provide, more pilots will fly into Walterboro to avoid the busier airports in that area. ✈

Breakfast Club

There will be a special weekend meeting of the Breakfast Club on Sept. 15 at Jekyll Island, Ga. Breakfast will be at Villas-by-the-Sea Resort Hotel Restaurant on Sunday, Sept. 15. But members will arrive Friday or Saturday for a weekend holiday.

Villas--including kitchen, bath and bedrooms--are $50 to $90 a night depending on size and location. For those who would like to attend, call 1-800-841-6262 for reservations.

The schedule for the remainder of the year is as follows:

Aug. 11 Orangeburg Municipal, Orangeburg

Aug. 25 Grand Strand Airport, N. Myrtle Beach (Don's Pancake House is host)

Sept. 8 Georgetown Airport, Georgetown

Sept. 15 Jekyll Island, Ga. (special weekend meeting)

Sept. 22 Holly Hill Airport, Holly Hill

Oct. 6 Newberry Municipal Airport, Newberry

Oct. 11-13 Woodward Field, Camden (EAA fly-in)

Oct. 20 Orangeburg Municipal, Orangeburg (annual meeting and election of officers)

Nov. 3 Summerville Airport, Summerville

Nov. 17 Laurens County, Laurens

Dec. 1 Walterboro Municipal, Walterboro

Dec. 15 Lancaster County, Lancaster

Breakfast Club members normally arrive between 9 and 9:30 a.m. Breakfast starts at 10 and is usually over by 11 a.m.

Fatigue: An insidious enemy more dangerous than thunderstorms

By John Likakis

The air taxi pilot's task did not appear to be difficult. The night was dark, with an overcast layer at 4,600 feet, but visibilities reported as 30 miles. The 10,000-hour pilot at the controls of the Beech Baron had completed two legs of the six he was scheduled to fly that night, transporting checks around the state of Arizona. Having departed Phoenix for this leg at 12:45 a.m., he droned through the sky at 5,500 feet, heading for Tuscon.

The pilot had been through a full day, starting at 8:15 that morning. During the course of the day, he had worked and flown, giving another pilot a checkout in a Baron for about an hour during the afternoon. After going all day, he had returned home for dinner. But his respite was brief. He returned to the airport at 8:30 to begin his nightly runs of bank checks.

After departing Phoenix for the third leg, he was cleared to Toltec intersection by Phoenix Approach. After this, Phoenix shut down for the night, and nothing further was heard from the pilot.

It was a little too routine. The Baron flew right by Tucson Airport and continued on course at about 5,500 feet. Losing only a slight amount of altitude, it slammed into the side of Mount Fagan in the Santa Rita mountains at the 5,200-foot level.

Fatigue—it's not always as obvious as this. It may not manifest itself as physical exhaustion. It may be dangerous in small doses. People may suffer from fatigue even though they have gotten plenty of rest. Pilots can find fatigue creeping up on them despite their sleeping habits or lifestyles.

Fatigue is insidious and pervasive. Its effects can range from simple tiredness to neurosis. But for aviators, it is an enemy which must be faced and can be more dangerous than a level 6 thunderstorm.

How can pilots recognize, prevent, and treat fatigue before it becomes life-threatening?

Symptomatic

Perhaps the most important part of the battle against fatigue is recognizing its onset before it becomes overwhelming. In its earliest stages, fatigue is very subtle. According to various studies, it tends to begin with mental lethargy.

Aviation psychologist Dr. Chaytor Mason, of the Institute of Safety and Systems Management of the University of Southern California, told us that one of the first things to go is the "scan." The brain, becoming dulled by the constancy of inputs during steady-state flight, begins to shut things off—much in the same manner as wearing a wristwatch becomes unnoticeable a few moments after it has been put on. As a result of this shutting down of stimuli inputs, the eyes start to narrow their scan and eventually begin to fixate on centrally located items.

This is the start of a vicious cycle. Another pyschologist specializing in aviation, Dr. Harvey Wichman of California's Claremont-McKinna College, explained that as the brain begins to filter out the constant stimuli—things like engine noise and vibration, or the unmoving engine gauges—fewer external inputs reach the brain cortex. The narrowing of the visual scan tends to compound this by taking in fewer things, also providing less and less external inputs.

At this point, according to the psychologists, a general state of sloth sets in. With the reduced stimuli to the brain, the mind begins to avoid stimulating actions. Pilots will tend to sit more motionless than normal, making fewer head movements. They will tend to forego optional actions, such as confirming their position, giving or getting Pireps and weather information, and so on. The pilot may become irritable, finding fault with the actions of controllers or his copilot. At night or in tough IFR conditions, such symptoms already are enough to cause fatal mistakes.

But now fatigue begins to take on more physical symptoms. As the body starts slowing down further, the eyes begin to get filmy and may start to feel like they're on fire. Physical motions start to slow as heart rate falls. The pilot may find himself staring blankly or fixing his gaze on a single instrument or object outside the aircraft. Mental activity becomes slower, and eventually drowsiness sets in.

Now the cycle picks up speed. Tired, the pilot does not want to move much or do much. The less he does, the less inputs the brain has to work with and the general slowdown of mental and physiological activity increases, making the pilot feel more drowsy and less like doing anything. Left to its own, this cycle will continue until, like the pilot cited above, the fatigued aviator slips into sleep.

The RAF Studies

In a study of pilots and fatigue, a group of British Royal Air Force pilots were given flights in a simulator. These flights lasted from two to six hours, and the pilots' performances were measured. This study found that, as the pilots grew fatigued, they were less likely to make errors due to misuse of controls, an interesting finding. But they discarded this advantage through loss of accuracy in timing and skill.

Critically, and perhaps the most deadly implication the study discovered, was that as fatigue increased, the pilots began lowering their performance standards. Things that would have been unacceptable at the start of the flight now became acceptable.

The study also found that the pilots became unable to integrate what their instruments were telling them. They tended to fixate on a single instrument and did not it compare to others or the airplane as a whole. In some cases, the pilots would stop looking at those instruments which were not directly in front of them—a deadly development in IFR flying.

But perhaps the most striking finding of the study was that pilots would tend to relax considerably when the airport was in sight. At this point, they would already be operating at a lower standard of performance, and with the airport so close they tended to lower these standards even further. The tendency was for the pilots to make ever-increasing numbers of mistakes, and accept ever-sloppier flying, as they perceived the end of the flight drawing nearer.

The Long Run

These are the effects of fatigue in the short term. Easy to feel and obvious in their impact, symptoms of this form of fatigue can be recognized and dealt with—usually by getting a good night's sleep.

But fatigue also acts over the long term. Extended periods of working hard, being under considerable stress, or working against the body's rhythms (or from all of these together) leads to a far more insidious kind of fatigue.

It is well known that the stress reaction in humans corresponds to a state of

arousal. Stress is known to produce a response akin to the "fight or flight" response. In short doses, this response works as intended, preparing the body for physical exertions. But when the response is maintained over extended periods, particularly when there is no outlet for the energies it creates, it is like connecting a battery to a ground—the body's energy is drained.

But because of the state of arousal the stress produces, often the fatiguing effects will not be noticed until the source of the stress is removed. For pilots, difficulties at home or on the job can produce such stress. Stepping into the cockpit often provides an escape from the source, allowing the body to transition from the stress-arousal of the initial source to the high arousal state of flying. This is when the fatigue slips in.

Silent and insidious, the mental muffling which fatigue brings poses a hazard which may well go unrecognized. The pilot may find himself taking longer to perform what should be simple mental calculations. Concentration suffers, and often attention wanders, drawn towards thoughts about the stress source or into daydreams as a means of escape from the stress.

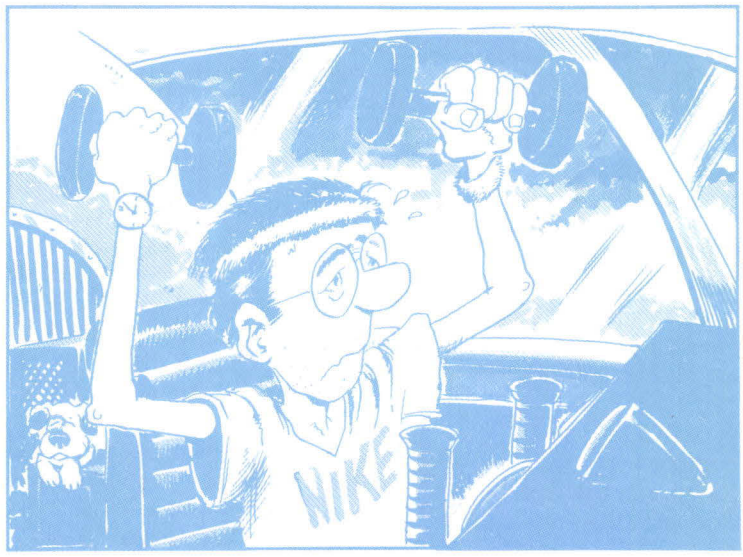
This kind of fatigue shows itself in other ways, too. A study of Australian airline pilots found that the pilots were in a constant state of arousal during flight—they were under stress. This manifested itself, for the most part, in gastric troubles. In the study, about 50 percent of the pilots involved suffered some form of gastric distress (chronic indigestion, ulcers, etc). The net result was the pilots did not feel 100 percent fit most of the time, and they found themselves having to make greater efforts to cope with day-to-day existence. The implications are obvious in a profession which demands so much perfection as flying.

This is one of the most difficult types of fatigue to combat. Coping with stress is largely an individual matter. Recognizing the stress and its results is a tremendous step towards mitigating the untoward effects.

Sleep—Too Much, Too Little

Perhaps the most obvious effects and causes of fatigue lie in sleep. Tired at the end of the day, most people go to sleep. Those who don't, or can't, simply find themselves getting more fatigued. At a certain point, it will be impossible to stay awake without chemical aid.

As a cure for physical fatigue, sleep is the one which everyone indulges in. For those who look a little tired, the age-old advice has been to get a good eight hours sleep.



Psychologists basically agree that all forms of light exercise are beneficial in staving off the effects of fatigue.

But this advice may not be entirely accurate. Studies have shown that different people need different amounts of sleep. It has been found that people's nightly requirements for sleep can vary tremendously, from a low of around four hours per night to a high of up to fourteen. The average, however, is generally held as eight hours.

Numerous studies have documented the effects of lack of sleep. One Army study found that sleep loss can make the subject slower physically and mentally. Worse, it tends to make his reactions erratic, even unpredictable. It can produce variations in reactions to situations which change from minute to minute. For example, where one minute the subject may be capable of catching or fending off an object thrown without warning, in the next he may allow it to hit him squarely in the head.

But getting *too much* sleep can also produce fatigue. Sleeping in excess of one's normal requirements tends to produce sluggishness which can last all day. Those who sleep too much can actually feel more tired than when they went to bed. This has been linked to a dropping of the body's basal metabolism from the prolonged sleep. In other words, the entire body—chemically, mentally, and physically—is moving slower. For pilots, this can mean slower reactions physically and mentally, which can have fatal consequences in the flying environment. The extra seconds needed to compute a holding pattern entry can produce a collision with terrain.

Because each person requires different amounts of sleep, it behooves pilots to determine what their requirements are. Experts say this is most easily done by simply going to bed when tired and waking up when refreshed. It sounds obvious, but it's not necessarily easy to do in today's environment. The premise is to avoid an imposed schedule for sleeping and let the body signal its requirements instead. Once the correct amount of sleep time has been found, it should then be reinforced to produce a good strong habit pattern for sleeping. After a time, the person will probably find he no longer needs an alarm clock as his body will awaken him at the best time, usually right on schedule.

Rock Around the Clock

The notion of allowing the body to determine its own best sleep pattern presupposes that one's lifestyle will allow such a pattern to form. But some pilots find themselves working hours which vary considerably from week to week. Some are even working on rotating shifts, which have them flying during daytime when they feel awake. This is done, in part, by regulating the levels of various chemicals in the bloodstream. Certain hormonal levels change when the sun goes down. (It has been found that the level of melatonin in the bloodstream, for example, rises with the onset of darkness and increases until the individual is asleep. It remains fairly constant until morning, when the level begins dropping prior to waking up.) Body temperature also falls during the hours of darkness as the body prepares for sleep. It has been

found that heart rate decreases during the early morning hours (usually around 3 or 4 a.m.).

A significant effect of consistently working against the circadian rhythm is its impact on the subject's health and social functioning. Psychologist Dr. Chaytor Mason told us that pilots working for some of the overnight package and cargo services have been experiencing higher rates of loss of medical certificates than their daylight-flying counterparts, and seem to be having more difficulties at home, too. Dr. Mason said he was not sure whether a factor in the home, such as a spouse's dissatisfaction with a pilot's night flying job, causes more stress in the pilot's life, leading to more health and personal problems, or whether the stress of working against the circadian clock causes the problem.

When someone is forced to work against his circadian ryhthm, what can he do to minimize the adverse effects? This question, unfortunately, has no single answer.

Circumstances

It all depends on the circumstances which the individual is trying to adjust to. Flights across time zones will require different strategies than flights which are being made at "off-hours."

Flights which cross time zones present unique conditions. The body finds its external time cues shifted, with some resulting circadian confusion. It has been found that the human body will generally compensate for one time zone per day. Pilots who have just completed a flight to Europe may have to wait up to eight days for their bodies to completely adjust to the new time zone (if they have crossed one week, darkness the next. And of course, flights which traverse several time zones impose a similar condition.

The net effect of both of these circumstances is to throw off the body's internal clock. Commonly known as circadian rhythms, these internal clocks tell us when to sleep, when to eat, when to perform various bodily functions.

There is evidence to suggest that the circadian clock is set by the time cues supplied by the environment. The regular cycle of daylight and darkness determines when our bodies feel sleepy and eight time zones).

The effects of time zone changes are not as pronounced on flights from east to west. It has been found that people arriving in the U.S. from Europe have an easier time re-adjusting to the new schedule. While no reason for this has been confirmed, it is suspected that most people find it easier to adjust to the longer day which the east to west time-zone change produces than they do to the longer nights which travel in the opposite direction brings on.

For pilots who find themselves working constantly changing schedules, however, the situation can be quite different. The body is still receiving the same external cues in terms of light and dark. But now it must be able to function at peak efficiency at any time. This kind of scheduling can lead to the body chasing the circadian clock but with no real hope of catching up. Those who work rotating shifts find themselves just settling into one clock setting, when they are called upon to reset the clock and transition to another shift.

The implications here are the same as those for crossing time zones—how can the pilot remain as sharp as he would during a normal day? The vast majority of those who work under these conditions find their own, individual way to cope. There has been some input from the scientific community on this, however.

Dr. Charles Ehret of the Argonne National Laboratory in Chicago has espoused a dietary approach to overcoming this "shift-lag." This diet is intended to be implemented during the individual's off-duty days (i.e. weekend) and should enable him to transition from one shift to the next more easily. The diet consists of regulating the intake of proteins and carbohydrates while simultaneously shifting the sleeping pattern. Extended over the course of the weekend, it permits the body to be better adjusted at the start of the new work week.

Quality sleep

Fatigue can also find its source in the quality of sleep. Restless nights with the sleep pattern interrupted often find the sleeper awakening quite tired from the night's exertions. Pilots with a baby at home have no doubt been subjected to this. Those without children have probably been awakened during the night by other causes. The effect is the same, however.

If the interruption is not consistent, in other words happening only once during the night, the effects will not be pronounced. But if the person finds himself awakened several times during the night, the effects can be dramatic. This will be true even if the person gets a total of eight hours of sleep.

The key is the amount of time which the person spends in REM (rapid eye movement) sleep. According to psychologists, this stage of sleep begins about 90 minutes after the person first falls asleep. It is considered one of the most critical stages of sleep. It is when the person dreams.

Several studies have shown that people deprived of REM sleep will awaken feeling worse than when they went to bed, particularly if the deprivation has continued over two or three nights. Thus, if the person's sleep is consistently disturbed before he enters REM sleep (the baby cries, an unmuffled truck passes by), the effect will be almost like getting no sleep at all.

REM deprivation can be caused by things other than disturbed sleep. Sleeping too deeply, when under the influence of alcohol or drugs, for example, will prevent the body from reaching REM sleep. Psychologist Dr. Harvey Wichman tells us that the body will not enter REM sleep until all alcohol has been metabolized. Until the blood alcohol level drops, the body will lie in very deep sleep. For someone who has really tied one on, this could take all night, leaving the victim feeling not only hung-over from the alcohol but also sleep-deprived even though he may have been unconscious for over eight hours.

Studies found that pilots tend to relax considerably when the airport is in sight.

Still of the Night

For some pilots, like those involved in air ambulance work, the call to fly can come at very odd hours, often in the middle of the night. For these pilots, there is no prospect of returning to bed when things quiet down. They must fly *now*.

Dr. Wichman suggests that pilots who find themselves in this situation be extra careful in their flying. As an aid to waking up, he suggests that doing light exercises before and during flight could help the pilot in maintaining his alertness. Fighting against both sleep loss and the circadian clock, these pilots must take steps to prevent themselves from falling into a torporous state through inactivity during the flight. The doctor suggests that talking to people (controllers or copilots) will help provide the needed stimuli to help keep the brain active.

Several psychologists we spoke with suggested that some forewarning of the impending flight could be used by the pilot to his advantage, provided this warning came far enough in advance to permit some small amount of sleep before takeoff.

As applied to an air ambulance pilot, it has been suggested by several aviation psychologists that dispatchers who find they have to awaken pilots in the middle of the night could help the pilot considerably by calling as far in advance of flight time as possible. If the pilot could be warned a few hours in advance, he could go back to sleep for a short time. Knowing he would have to get up shortly, his body would attempt to compensate for the anticipated loss of REM sleep.

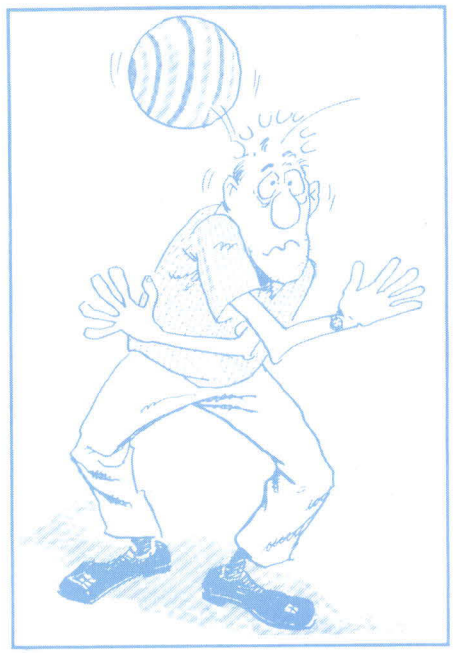
Flying Fatigue

Fatigue can also come during flight from various aspects of the flying environment. While not very demanding physically (pilots certainly do not exert themselves physically as much as longshoremen do), the cockpit requires large amounts of mental activity. It also imposes its own special stresses on the body.

That long IFR flight, featuring several clearance amendments, routing changes, and tricky navigation problems, can tax one's mental abilities. Prolonged flight under these conditions can certainly promote reduced mental acuity, and has been shown to lead pilots into making mistakes.

More insidious, but just as fatiguing, is a flight where nothing happens. Long periods of scanning the instruments with little conversation or break in the scanning routine is, to say the least, boring. Boredom is fatiguing.

Fatigue can also be brought on by some



Fatigued pilots sometimes couldn't catch things tossed at them by surprise.

of the cockpit and cabin amenities. Pressurized aircraft tend to have *very* dry air in the cabin at altitude. This leads to mild dehydration—a fatiguing state. Pilots often compound this by drinking coffee, cola and sweetened drinks. Coffee and cola both contain caffeine and both act as diuretics. They prod the kidneys on to greater efforts, drying the body out faster. The drier the pilot gets, the more fatigued he gets. The most obvious way around this trap is to avoid caffeinated and sweetened beverages. Since water is what is being lost, then water (or fruit juice) is what should be taken in to replace it, the experts say.

Another source of cockpit fatigue is noise. It is well known that noise is physically tiring. This is particularly true of continuous, droning type noise, such as aircraft engines. During World War II, a pilot ferrying a P-38 fighter across the Atlantic found the drone of the engines putting him to sleep. When the fatigue became too much for him to handle, he found relief by doing barrel rolls in the heavily loaded aircraft. The adrenalin boost he got from scaring himself was enough to let him finish the flight to Greenland.

While pilots do not generally fly aircraft which are capable of performing rolls safely, there are other ways of fighting cockpit fatigue. Breaking up routine is probably one of the best remedies for fatigue on the flight deck.

According to the aviation psychologists we spoke with, the trick is to have a variety of stimuli for the brain to work on. Dr. Wichman suggests that talking with people on the ground, like Flight Watch or some other airborne service, is probably one of the best ways to accomplish this. Not only does it provide a break from the routine of the flight deck, but also provides the opportunity to gather potentially invaluable information.

Another trick he recommends is to do small mental chores, like checking position off as many navigational aids as possible. This will help alleviate the boredom and fatigue and also enhance the safety of the flight. Likewise, checking groundspeeds, computing fuel burn, or any number of items which might otherwise get deferred until later in the flight can help reduce fatigue.

One way to both reduce fatigue and prevent its further onslaught, according to Dr. Wichman, is to move around. Pilots tend to sit quite motionless at the controls. This tends to dull the senses and reduce circulation. Moving about, even if it is only flexing the arms and legs while seated, will tend to provide stimuli to the brain and aid tremendously in restoring circulation. It will also cause the release of small amounts of adrenalin, which will act as a short-term pick-me-up.

Dr. Wichman also told us that when strong symptoms of drowsiness set in, the key is to produce some sort of change in the environment. Long-distance drivers have used the trick of opening the window and letting cold air blow on their faces. Even Lindbergh used this trick, and it works. Eating a strong mint or candy will be effective in providing stimulus, as will pinching oneself or biting a lip. Dr. Wichman told us of one pilot he knows who places a rubber band loosely around one wrist. When the pilot starts feeling tired, he just stretches the rubber band out and lets it snap smartly against the wrist. The short, stinging pain this produces gets the adrenal glands going, providing a nice boost.

Long and Short

Whether flying the Atlantic, or just flying the pattern, fatigue can be as deadly as an airframe failure. According to one expert on aviation psychology, as cockpit tasks become more cognitive (mental) in nature, fatigue can force the pilot into making errors. The subtle and insidious nature of fatigue's effects can delay the pilot from taking remedial actions until it is too late—when fatigue has robbed him of critical abilities. The only real cure is prevention—rest, relaxation, and proper planning. But for the aviator who is forced to fly when fatigued, being aware of his body's needs, or the effects of fatigue, and of some of the methods for combating it will make those tiring flights easier and safer.

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CAP Cadets enjoy Parris Island encampment

More than 70 Civil Air Patrol Cadets from cities all over South Carolina recently completed a week's encampment at Parris Island and got a taste of the famous Marine Corps training.

"The last time we brought the cadets to Parris Island was in 1980 and they really loved it," CAP Maj. Heyward Inabinett said.

Inabinett, commander of the Beaufort CAP squadron said, "every year we ask them where they want to go and they say, 'We want to go to Parris Island!' "

One week of summer camp at a military base is an annual affair for the cadets and a requirement to move from the cadet enlisted to the officer ranks, Inabinett said.

The cadets, both male and female, ranged from 13 to 18 years old.

Inabinett says the drill instructors made the training week a big challenge for the cadets.

"At other cadet encampments, the senior cadets run the program," he said. "But here, the DIs take charge and the kids love the strict military discipline and the Marine atmosphere they get from them."

During the week, the cadets' schedule included running the obstacle courses, drill all week, hand to hand combat; pugil sticks and bayonet assault training; classes on customs and courtesies, map and compass and rank structure; firing the M-16 and riding in a helicopter at the Beaufort Marine Corps Air Station.

Cadet 1LT Rodney Cordona, who commands the Greenville cadets, says he really enjoyed the hand-to-hand combat training and was really impressed with his drill instructors.

"They're nice. . . well, they're not nice, but I respect them a lot and I think they're good. I would like to be able to handle my cadets the same way they handle us."

The female cadets were no less impressed. Cadet LtCol. Debra Scott, from Beaufort, was one of two girls who completed the challenge course by inching her way to top in the rope climb and she gives a lot of credit for her perseverence to her drill instructor.

"I liked the Challenge Course and I have a lot of respect for my drill instructor. It took a while to get used to the routine. The first day was really hard, but I liked everything."

Two Parris Island Drill Instructors, Sgts. Peter A. Vargas and William Lancaster, who were in charge of the cadets, said the experience was really fun for them.

"They're pretty motivated," Vargas said. "It's interesting to see that their reactions are about the same as recruits."

"It went real smooth," Lancaster added. "They catch on real quick. All I can say is I hope we get some of them for Marine recruits in the future."✈

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